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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BOBISH, CHRISTOPHER S

ART UNIT

PAPER NUMBER

3746

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,913	<b>Applicant(s)</b> TODD, ROGER KEITH	
	<b>Examiner</b> CHRISTOPHER BOBISH	<b>Art Unit</b> 3746	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/24/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the heater" in line 3. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4-9, 11-17, 19-20, 21 and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Ciesielski (US Patent No. 3,087,438).

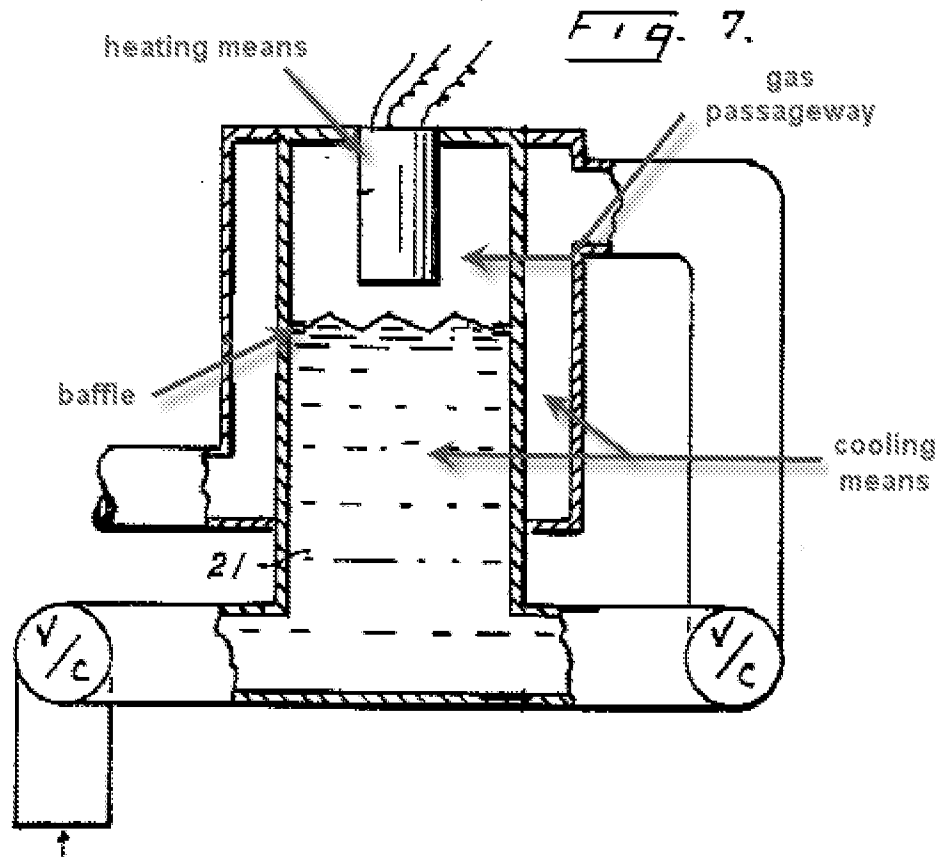
Ciesielski teaches:

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limitations from claims 1, 12, 15, 26, 27 and 28, a pump **(10)** comprising: heating means **(17)**, and a pump body comprising an inlet **(18)** and an outlet **(16, 24)**, the pump arrangeable in use such that the pump body includes a volume of gas and a volume of liquid, and such that heating of the volume of gas causes liquid to flow through one of the inlet and the outlet and cooling **(via cooling means 23 and the fluid flowing there through)** of the volume of gas causes liquid to flow through the other of the inlet and the outlet **(C. 5 Lines 53-75 and C. 6 Lines 1-6)**, wherein the heating means is arranged with the pump body and the pump body is shaped such that heating of the volume of gas by the heating means promotes substantially non-divergent body movement of the volume of gas **(the expansion of the gas in the upper portion of chamber 21 would appear to occur in a non-divergent way, as there is no structure to cause such an divergent effect)**; wherein the heating of the gas and the cooling of the gas promote substantially the same circulatory movement in the volume of the gas **(C. 5 Lines 69-75 and C. 6 Lines 1-4)**;

limitations from claim 2, wherein the heating means **(17)** is arranged with the pump body and pump body is shaped such that heating of the volume of the gas by the heating means promotes body movement of the volume of gas substantially in a single plane **(the expanding gas volume will have a body movement downwards in the cylinder 21 in a manner that appears to be in a single plane, see FIG. 6 and 7)**;

limitations from claims 4 and 21, wherein the pump body includes at least one baffle therein, the baffle defining a gas flow passageway between an inner wall of the pump body and the baffle, and wherein the gas flow passageway comprises a rising portion having the heating means arranged therein and a falling portion having the cooling means arranged therein **(see FIG. 7 below as adapted by the examiner)**;



limitations from claim 5, wherein the gas flow passageway comprises pipe work **(the pipe forming chamber 21)**;

limitations from claims 6, 7 and 8, wherein the gas flow passageway comprises a circular annular passageway **(the chamber 21 is circular and the passageway formed at the top end as shown in the drawing above will be formed in an annular manner about the element 17)**; comprising a substantially "P" or "Q" shaped passageway **(when viewed from above, the passageway around the element will appear as a substantially Q shaped passage)**;

limitations from claims 9 and 11, wherein the pump body **(FIG. 7)** comprises a first part **(A)** including a volume of gas and a second part **(B)** including a volume of liquid; and a diaphragm **(25)** arranged in the second part of the body to separate the first and second parts **(C. 6 Lines 17-33)**;

limitations from claims 13, 14, 16 and 17, wherein the cooling means is arranged within the pump body and/or at an upper portion of the pump body **(the liquid**

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**that is contained in chamber 21 and also that flows through jacket 23 serve as cooling means);**

limitations from claims 19 and 20, wherein the heating means **(17)** is arranged above and offset laterally from the cooling means with no overlap **(see FIG. 7 with respect to the position of heating means 17 and the liquid which serves as the cooling means, relative to each other);**

Claims 1-4, 6-7, 9, 11, 12, 15, 18-20 and 26-28 are rejected under 35

U.S.C. 102(b) as being anticipated by Yarborough (GB 2,019,486 A).

Yarborough teaches:

limitations from claims 1, 12, 15, 26, 27 and 28, a pump **(FIG. 1)** comprising: heating means **(15)**, and a pump body comprising an inlet **(P1)** and an outlet **(P2)**, the pump arrangeable in use such that the pump body includes a volume of gas and a volume of liquid, and such that heating of the volume of gas causes liquid to flow through one of the inlet and the outlet and cooling **(via cooling means 55)** of the volume of gas causes liquid to flow through the other of the inlet and the outlet **(C. 2 Lines 91-127, C. 4 Lines 121-130)**, wherein the heating means is arranged with the pump body and the pump body is shaped such that heating of the volume of gas by the heating means promotes substantially non-divergent body movement of the volume of gas **(the expansion of the gas in the upper portion of chamber 13 would appear to occur in a non-divergent way, as there is no structure to cause such an divergent effect);** wherein the heating of the gas and the cooling of the gas promote substantially the same circulatory movement in the volume of the gas **(C. 2 Lines 128-129 and C. 3 Lines 1-10);**

limitations from claim 2, wherein the heating means **(15)** is arranged with the pump body and pump body is shaped such that heating of the volume of the gas by the heating means promotes body movement of the volume of gas substantially in a single plane **(the expanding gas volume will have a body movement downwards in the cylinder 13 in a manner that appears to be in a single plane, see FIG. 1-6);**

limitations from claims 3 and 18, wherein a heating means is located at a lower part of the pump body **(C. 4 Lines 102-116)**

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limitations from claims 4, wherein the pump body includes at least one baffle **(displacer 10 acts as a baffle)** therein, the baffle defining a gas flow passageway **(gas flows between a portion of the baffle 10 and cylinder 13)** between an inner wall of the pump body and the baffle;

limitations from claims 6 and 7, wherein the gas flow passageway comprises a circular annular passageway **(the chamber 13 is circular and the passageway formed at the top end as shown in the drawing above will be formed in an annular manner about the displacer 10);**

limitations from claims 9 and 11, wherein the pump body comprises a first part including a volume of gas and a second part including a volume of liquid; and a diaphragm arranged in the second part of the body to separate the first and second parts **(C. 4 Lines 80-92);**

limitations from claims 19 and 20, wherein the heating means **(17)** is arranged above and offset laterally from the cooling means **(either liquid 11 or coils 55)** with no overlap **(see FIG. 6);**

Claims 1, 12, 15 and 22- 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Mandroian (US Patent No. 3,898,017).

Mandroian teaches:

limitations from claims 1, 12, 15, 26, 27 and 28, a pump **(10)** comprising: heating means **(50)**, and a pump body comprising an inlet **(30)** and an outlet **(35)**, the pump arrangeable in use such that the pump body includes a volume of gas **(25)** and a volume of liquid **(20)**, and such that heating of the volume of gas causes liquid to flow through one of the inlet and the outlet and cooling **(via cooling liquid 20 and cap 19)** of the volume of gas causes liquid to flow through the other of the inlet and the outlet **(C. 3 Lines 3-21)**, wherein the heating means is arranged with the pump body and the pump body is shaped such that heating of the volume of gas by the heating means promotes substantially non-divergent body movement of the volume of gas **(the expansion of the gas in chamber 15 would appear to occur in a non-divergent way, as there is no structure to cause such an divergent effect);** wherein the heating of the gas and the cooling

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of the gas promote substantially the same circulatory movement in the volume of the gas **(C. 3 Lines 3-21)**;

limitations from claim 22, wherein the pump body defines an axially symmetric cavity **(15)** in which the heating means **(50)** and cooling means **(19, 20)** are arranged such that heating of the volume of gas by the heating means and cooling of the volume of gas by the cooling means promote movement in the volume of gas in a pattern defining a substantially toroidal surface **(the circular shape of the heating element 50 shown in FIG. 1 and FIG. 1 in combination with the cooling of the gas via liquid 20 and cap 19 surrounding the element are believed by the examiner to be capable of producing a toroidal volume pattern, C. 3 Lines 3-21)**;

limitations from claim 23, wherein the heating element **(50)** comprises an annular heating element **(see FIG. 1)** arranged in the pump body;

limitations from claim 24, wherein the cooling element **(19, 20)** includes an annular cooling element disposed above and radially outward from the heating element **(see FIG. 1, as both the liquid 20 and the cap 19 extend annularly away from the heating element 50)**;

limitations from claim 25, wherein the heating element is located above and radially inward from the heating element **(see FIG. 1, as both the liquid 20 and the cap 19 extend radially inward from the heating element 50)**;

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ciesielski (US Patent No. 3,087,438) as applied to claims 1 and 9 above, and in further view of Saxe (US Patent No. 3,604,822).



Ciesielski discloses and teaches of the pump in claims 1 and 9.

Ciesielski does not teach a separable pump body, but Saxe does.

Saxe teaches:

limitations from claim 10, a pump (**see FIG. 2**) driven by vapor including a diaphragm (**6'**) separating the vapor from a fluid; having inlet (**4'**) and outlet (**5'**) ports for pumping the fluid; wherein the pump body includes two parts (**2', 3'**) being releaseably coupled to each other (**C. 4 Lines 13-18**);

**It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to construct the pump body of Ciesielski in two releasable parts as taught by Saxe in order to allow access the inside of the pump and the diaphragm for necessary maintenance.**

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER BOBISH whose telephone number is (571)270-5289. The examiner can normally be reached on Monday through Thursday, 7:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571)272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Bobish/  
Examiner, Art Unit 3746

/Charles G Freay/  
Primary Examiner, Art Unit 3746

/C. B./  
Examiner, Art Unit 3746